Unit 4: TQM Tools

Puzzle:

A company wants to use FMEA (Failure Modes and Effects Analysis) to identify potential failure modes in its assembly process. The assembly process has three potential failure modes:

1. Incorrect assembly of components.
2. Missing components.
3. Poor quality of components.

Rate the severity, occurrence, and detection for each failure mode on a scale of 1 to 10. Use the following ratings to compute the Risk Priority Number (RPN):

1. **Severity**: How serious is the failure mode if it occurs?
2. **Occurrence**: How likely is the failure mode to occur?
3. **Detection**: How likely is the failure to be detected before reaching the customer?

Solution:

For each failure mode, you calculate the RPN using:

RPN = Severity * Occurrence * Detection

Example Ratings:

1. **Incorrect assembly of components:**
    - Severity: 8
    - Occurrence: 4
    - Detection: 6
    - RPN = 8 * 4 * 6 = 192
2. **Missing components:**
    - Severity: 7
    - Occurrence: 5
    - Detection: 7
    - RPN = 7 * 5 * 7 = 245
3. **Poor quality of components:**
    - Severity: 9

- Occurrence: 3
- Detection: 5
- RPN = 9 * 3 * 5 = 135

In this case, "Missing components" has the highest RPN, indicating it is the most critical failure mode to address.